

IN THE DRAWINGS

The attached sheets of drawings include changes to Figs. 1, 10 and 11. These sheets, which include Figs. 1, 10 and 11, replace the original sheets including Figs. 1, 10 and 11.

Attachment: Replacement Sheets (3)

REMARKS/ARGUMENTS

Favorable reconsideration of this application, in light of the present amendments and following discussion, is respectfully requested.

Claims 1-5 are pending. Claim 1 is amended. Replacement drawings are submitted herewith. The specification is amended to incorporate the suggestions provided in the outstanding Office Action. Support for the amendment to Claim 1 and the replacement drawings is self-evident. No new matter is added.

In the outstanding Office Action, Claims 1-5 were rejected under 35 U.S.C. § 103(a) as obvious over Morishima (Japanese Patent Pub. JP 06-026471, herein "Morishima") in view of Yajima et al. (Japanese Patent Pub. JP 04-311693, herein "Yajima").

Regarding the objection to the drawings for not including a reference number (30) describing the main bearing, a replacement drawing including Fig. 10 is submitted herewith including the reference number (30). Accordingly, Applicants respectfully submit that the objection to the drawings is overcome.

Replacement Figures 1 and 11 are also submitted herewith to address minor informalities.

Regarding the objection to the specification, the specification is amended to address the informalities noted in the outstanding Office Action. Regarding the second instance of "rotating shaft 16" noted in the outstanding Office Action as occurring on page 13, line 13, Applicants respectfully submit that this term is not found there, and the only instance of "rotating shaft 16" in the specification has been corrected on page 5. Accordingly, Applicants respectfully submit that the objection to the specification is overcome.

Regarding the rejection of Claims 1-5 as obvious over Morishima in view of Yajima, that rejection is respectfully traversed by the present response.

Amended independent Claim 1 recites, in part:

A scroll compressor comprising:
a fixed scroll...
an orbiting scroll...
wherein a back pressure chamber is provided on the other side face of the end plate of at least one of the fixed scroll and the orbiting scroll, and the one scroll is pressed against the other scroll by introducing fluid which is compressed by the fixed scroll and the orbiting scroll into the back pressure chamber;
a step portion is provided on the one side face of the end plate of at least one of the fixed scroll and the orbiting scroll, which has a high part with a height thereof which is high at a central side in a spiral direction, and a low part with a height thereof which is low at an outer peripheral end side; and
an upper rim of the wall of the other of the fixed scroll and the orbiting scroll is divided into a plurality of parts to form a stepped shape having, corresponding to the parts, a low upper rim where the height of the part is low at a central side in the spiral direction, and a high upper rim where the height of the part is high at an outer peripheral end side.

Accordingly, the recited scroll compressor includes a fixed scroll and an orbiting scroll. The compressor comprises a back pressure chamber. An end plate of one of the scrolls includes a step portion. An upper rim of the other scroll includes a stepped shape. One scroll is pressed against the other scroll by introducing fluid which is compressed by the fixed scroll and the orbiting scroll into the back pressure chamber. Therefore, the compression chamber is sealed without tip seals, and leakage of fluid is prevented in the compression chamber. Accordingly, when a gap appears between the tip seal and the end plate, problems such as the tip seal falling off or bending do not occur.

Morishima describes a scroll compressor comprising a back pressure guide means (14) which applies back pressure to a fixed scroll blade (12) for regulating axial movement under normal operation. Morishima allows axial movement of the fixed scroll (12) for widening a clearance in respect to a turning scroll (11) and allowing gas inside a compressed space to escape when pressure inside the compressed space is abnormally increased. Morishima provides and a high-pressure discharging chamber (22) in which a high-pressure

refrigerant gas discharged from a discharge port (15) is temporarily filled. The high-pressure refrigerant gas in the high-pressure discharging chamber (22) applies back pressure to the fixed scroll blade (12).

As acknowledged in the outstanding Office Action, Morishima does not teach or suggest that a step portion is provided on the one side face of the end plate of at least one of the fixed scroll and the orbiting scroll and an upper rim of the wall of the other of the fixed scroll or that the orbiting scroll is divided into a plurality of parts to form a stepped shape. Furthermore, Morishima does not disclose nor suggest that a back pressure chamber is provided on the other side face of the orbiting scroll.

Yajima describes a scroll compressor comprising a step portion and a stepped shape, wherein seal members (33, 39) are provided on the upper rim of the outer peripheral end side of swirl bodies (27, 35). However, Yajima does not disclose a back pressure chamber and the effect such that the compression chamber is sealed by the compressed fluid introduced into the back pressure chamber without tip seals.

If the devices of Morishima and Yajima were combined, a person having ordinary skill in the art would produce a scroll compressor comprising a back pressure guide means, a step portion, a stepped shape, and seal members. In such a scroll compressor, if a seal member were provided on the upper rim which is placed in the vicinity of a step of the stepped shape of one scroll, a rotational angle were generated by releasing the seal member from the bottom face of the end plate of the other scroll while the scroll makes one revolution.

In above-noted arrangement, the seal member would be provided so as to float to the opposite scroll side from the bottom of a groove provided on the upper rim by pressure (back pressure). Therefore, the seal member would fall from the groove and then break.

In the invention recited in Claim 1, the scroll compressor provides that one scroll is pressed against the other scroll by applying back pressure to a back pressure chamber in order to prevent the above problems and similarly prevent leakage of fluid from the top of the scroll.

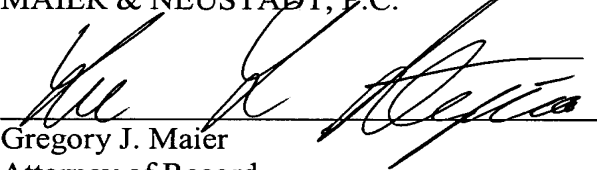
Accordingly, even if the inventions of Morishima and Yajima were combined, the asserted combination would not include all of the features recited in amended independent Claim 1 or Claims 2-5 depending therefrom.

Applicants also note that no English translation of either of Morishima and Yajima has been provided in the outstanding Office Action. MPEP § 706.02 II makes clear that if a rejection is based on English Abstract of a foreign language reference, a full English translation of the reference shall be supplied to the Applicants in the next Office Action. **Additionally, any Final rejection may not rely on the Abstract of a foreign language reference unless the Applicants are provided with a full English translation of the foreign language reference.**

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Gregory J. Maier
Attorney of Record
Registration No. 25,599

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 03/06)

Lee L. Stepina
Registration No. 56,837